



Owen Johnson

*Butia capitata* thriving in the Islamic Garden, Burgess Park, London. This South American palm is increasingly being grown outside in the British isles

# Half-hardy trees in Britain and Ireland – part one

Growing exotic trees at the limits of their hardiness has a strong appeal to gardeners.

OWEN JOHNSON summarises his recent survey and discusses species from dry climates that need long hot summers to thrive

WELL OVER A THOUSAND tree species, which for various reasons are at the limits of their hardiness in Britain, have been grown here out-of-doors. Perhaps this is not so surprising: the number of species, and with it the number of really choice ones, expands almost exponentially as you approach the tropics, and easier travelling has recently let more and more of these be introduced. Obvious fascinations exist in trying to grow plants which are tricky, novel, or headily exotic; most significantly, talk of global warming is persuading gardeners that trees once considered tender are safe or even superior choices.

### Background to the survey

In 2006, an RHS bursary helped me complete a survey of hundreds of gardens, mostly in southern England, where half-hardy trees have been tried out. My aims were:

- to update the Tree Register's unique records of the performance of trees in Britain;
- to provide an overview, for future reference, of populations of less-hardy species in today's climate;
- to identify trees which seem suitable for wider planting.

These two articles introduce a few which seem particularly garden-worthy. I have skipped some excellent half-hardy trees, like *Eriobotrya japonica*, because they are quite familiar already, and omitted others, such as *Citrus*, because they seem likely to remain greenhouse subjects.

This first part considers species whose origins imply that they should mostly do best in warm or sunny places: the Channel Islands, south-east England, and many inner cities. The second part will look at trees which are more likely to need plenty of wet.



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*Acacia baileyana* is a short-lived Australian wattle that flowers from a young age. It could be a useful and floriferous alternative to *Acacia dealbata*. This specimen is at St Leonards in East Sussex

Measurements are height in metres x trunk diameter in centimetres, generally taken at 1.5m. Most were made by the author, but many thanks to fellow tree-hunters for all their contributions.

### Hardiness

Seldom does the survival of a 'tender' tree simply depend on how low the thermometer falls. *Albizia julibrissin*

is rated as Zone 7 in North America because Korean forms withstand a Boston winter. The only part of Britain likely to get that cold is the Cairngorms, but no *Albizia* is going to last long in Braemar: it is an extreme example of a tree that suffers in mild frosts here because it requires long, hot summers to ripen its wood. South African trees, comparably, may die in the British winter because ➤

### MINIMUM TEMPERATURES IN BRITAIN AND IRELAND

#### Some minimum temperatures (°C), in ascending order, recorded in gardens and towns with half-hardy trees\*:

Bedgebury Pinetum, Kent	-18.4	(1940)
Royal Botanic Gardens, Kew	-17.4	(1905)
Ardtornish, Morvern, Argyll	-17.0	(1981)
Royal Botanic Garden Edinburgh	-15.5	
RHS Garden Wisley, Surrey	-15.1	(1982)
Ness Botanic Garden, Wirral	-12.9	
Logan Botanic Garden, Galloway	-10.5	
Glenveagh Castle, Co Donegal	-10.0	
Inverewe, Wester Ross	-9.7	(1987)
Mount Stewart, Co Down	-9.0	(1981-2)
Plymouth, Devon	-8.8	(1979)
John F Kennedy Arboretum, Co Wexford	-8.4	(1979)
Muckross Abbey, Killarney	-8.0	(1973)
Hastings (White Rock Gardens), E Sussex	-7.9	(1987)
Tresco Abbey Garden, Isles of Scilly	-7.3	(1987)
Fota, Co Cork	-7.2	

#### Some minima since 1990:

Wakehurst Place, W Sussex	-10	(1991)
Abbotsbury Sub-tropical Gardens, Dorset	-7	(1991)
Castlewellan, Co Down	-7	(1995)
Trelissick, Cornwall	-7	(1997)
Trebah, Cornwall	-4	(1996)
Chelsea Physic Garden, London	+1	(1997)

\* Data mostly drawn from *PlantNetwork*, the website of the Plant Collections Network of Britain and Ireland ([www.plantnetwork.org](http://www.plantnetwork.org)). None of the records stretches back into the 19th century or earlier, when lower temperatures will presumably have occurred. The figures do at least explode the myth that only Irish and west coast gardens are reliably mild enough to grow half-hardy species.

they have been weakened by a constant struggle with low light-levels and against fungal infections triggered by the high humidity. By contrast, Andean and New Zealand trees may succumb to winter cold here because they find our climate too dry to thrive.

This said, extreme winter cold will as often as not provide the *coup de grâce*, as well as killing trees which had thrived but simply lacked the physiology to cope with frost. In general, coastal districts, especially if there is deep water close to shore or if they jut into Atlantic waters warmed by the 'Gulf Stream', will escape the extreme temperature fluctuations of inland sites; areas with sandy soil will cool and warm more dramatically than places on clay. Districts facing the Continent will bear the brunt of cold easterlies, while places in the lee of high ground will be milder since the airstream warms up as it sinks. A garden at 200m will be 2°C colder, all else being equal, than one at sea-level.

Bricks and tarmac warm up in sun and release this heat at night, while heated buildings and internal combustion engines combine to radiate warmth. Most British cities nowadays escape the very low temperatures experienced by rural areas. Geographically, these 'urban heat islands' are small; but as many as half of us garden in them. Inner London, in particular, enjoys an unusual combination of bright, hot summers with almost frost-free winters, and should be the best place to try trees from non-montane Australia, the Brazilian highlands, or South Africa. Gardeners from Chelsea travel to Tresco to see *Metrosideros excelsus* flowering in a microclimate very similar to the one they left at home.

Counter-intuitively, the long-term survival of a specimen tree can depend as much on day-to-day freaks

of the weather as on climatic trends. The *climate* of Tresco is frost-free; the *weather*, in January 1987, saw temperatures drop to -7.3°C in the Abbey Gardens, and *Araucaria heterophylla*, *Calodendrum capense* and many other unique and historic trees froze to death. Once-in-a-lifetime polar airflows, in fact, do much to even out the differences between mild and chilly sites, and will probably continue to limit the influence of global warming on British gardeners' ability to grow less hardy trees.

**Asia**

Of plants from the hotter, drier parts of Asia, *Olea europaea* is a prime example of a tree planted widely only in the last few years. Talk of global warming has certainly been more instrumental in this case than global warming itself, since the examples of thriving mature olives have long been present at the Chelsea Physic Garden and at Magheramore south of Dublin; in 1842, Loudon mentioned trees in the kitchen garden of Luscombe Castle near Exeter.

Only one good sturdy *Albizia julibrissin*, its trunk 27cm thick in



Simon Garbutt

*Albizia julibrissin* is often tried in gardens and has been seen as a young street tree in London

2003, is known so far, from Les Vaux on Jersey, but its flowers and exquisitely delicate foliage should make this *Acacia*-like tree a prime choice. (There are a few young street plantings in Harrow.) Easily confused with the *Albizia* is *Paraserianthes lophantha* from south-west Australia, slightly coarser but evergreen at least; the spindly ones in mild south-western gardens might well prefer a good summer baking.

Two Asian species used as street trees in warmer climates, *Firmiana simplex* and *Melia azedarach*, are each represented in England by one young planting full of promise. In Ventnor Botanic Garden, the *Firmiana* – with leaves suggesting *Paulownia* and late-summer blossom more like *Koelreuteria* – is 7m x 20cm (one much older and slightly larger tree survives at Fota in Co Cork). A *Melia* planted in 2001 in St Leonard's Terrace, Chelsea, was a spreading and shapely 6m x 15cm after four years, with masses of starry mauve flower amid its elaborate spring foliage (again a single old, gaunt, two-stemmed tree is known, from Les Vaux). Other younger plantings



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*Acacia melanoxylon*, here at the Old Mill Gardens, Lewisham, appreciates London's hot summers



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*Firmiana simplex* flowering at Ventnor Botanic Garden on the Isle of Wight in 2006. This species may be seen more frequently as a street tree in central London in the future

remain less successful: this is a species with a vast natural distribution and provenance must be important.

### Australia

Australia offers a multitude of drought-tolerant ornamentals. *Eucalyptus* are the most conspicuous trees, and 125 or so of the 600-odd species are now grown in Britain.

*Eucalyptus globulus*, with its long dark glistening leaves, is a good indicator of a mild climate: even giants seldom survive temperatures lower than  $-7^{\circ}\text{C}$ . This means that none in mainland Britain is over 20 years old, with the possible exception of a scruffy pollard in Minehead's Blenheim Gardens, Somerset. Montane *Eucalyptus* are happier than most Australian trees in cool moist conditions, but even *E. globulus* revels in hot summers: one in the Leigh-on-

Sea Library Garden, Essex, is already 15m x 59cm and flowers profusely.

*Eucalyptus regnans*, the world's tallest broadleaf, is no hardier and has disappointed in Britain so far. Among comparable *Eucalyptus* with hanging crescent-moon foliage and instant-makeover growth-rates, *E. nitens* seems the handsomest and most reliable, only the odd ugly fork telling of early damage. Also outstanding, and hardy to at least  $-8^{\circ}\text{C}$ , are the softly grey-leaved *E. delegatensis*, and *E. viminalis*, brilliantly white-barked at best and 29m in 18 years at Abbotsbury, Dorset. Two lesser-known species particularly impressive at Kew are *E. chapmaniana* and *E. rodwayi*.

Of the *Eucalyptus* with uncommonly attractive foliage, *E. nicholii* has delicately slender, purple-flushing leaves and has yet to exceed 15m, even without fatal frosts. *Eucalyptus pulchella* is similarly graceful at Logan

Botanic Garden, Scotland. *Eucalyptus cinerea* is the rarest so far, but perhaps the showiest, of three species which retain their vividly silvery juvenile foliage; the contrast with its rugged rufous bark is particularly satisfying.

Some *Eucalyptus* have pink or red blooms. Most, like *E. caesia* at the Architectural Plants Nursery near Horsham, Sussex, (21m x 67cm), quickly become too lofty and gloomy to count as flowering trees, but *E. leucoxylon* 'Rosea' is showy at the Chelsea Physic Garden.

Few if any Australian *Acacia* will survive the hardest winters to which the sunnier half of England is prone, but several are so quick and ornamental that they are still well worth growing. The familiar *A. dealbata* (23m in Co Carlow) was 13m x 51cm in a tiny front garden in Christchurch Street, Chelsea, in 2003; subsp. *subalpina* is distinct and attractive in its tiny silver leaves. Comparable, and 16m x 34cm at RHS Garden Rosemoor, Devon, already, is *A. filicifolia*. *Acacia mearnsii*, very occasionally found in suburban gardens, is probably supplied in error for *A. dealbata*: it has dark glossy foliage, flowers erratically in summer, and is tenderer.

*Acacia baileyana* is almost confined to the mildest regions, but in a good season nothing surpasses its *Laburnum*-like February blossom, while the silvery-mauve filigree foliage of 'Purpurea' (6m at Portmeirion and 3.5m in a front garden in Thorpe Bay, Essex) is a special joy. *Acacia verticillata*, with gorse-like foliage, also blooms prolifically, but I have found slender trees (to 9m) only in south-west England. *Acacia riceana*, differing in its graceful weeping habit, is exceptionally desirable but certainly tender. *Acacia* 'Exeter Hybrid', the hybrid of these two, may be a ➤

better prospect, with a good tree at Tresco Abbey Garden, Scilly, and, I think, a younger municipal planting by Paris Street, Exeter, Devon.

Of the *Acacia* with *Eucalyptus*-like phyllodes, *A. obliquinervia* seems outstanding, the shoots brilliantly bloomed white and each silvery 'leaf' finely margined with crimson. Blackwood, *A. melanoxylon*, also stands apart in growing as a handsome if slightly gloomy, tall tree, and in enjoying the cool humidity of coastal Ireland where mature ones reach 27m. In England it is frequently killed back by moderate frosts, but is a fine 13m in Cardiff's Alexandra Gardens and the Old Mill Gardens, Lewisham, London.

*Atherosperma moschatum* grows with blackwood in the wettest Australian forests. Its rather sombre leaves smell of oranges and vanilla, and it is tough enough to have made a neat 9m spire (by 2002) in the Valley Gardens, Surrey. *Eucryphia moorei* is the loveliest of its floriferous genus for its finely pinnate glistening foliage, but seems the most exclusively westerly-growing Australian tree in British gardens, flourishing north to



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A young plant of *Podocarpus henkelii* at Treliassick Garden, Cornwall. In contrast to most *Podocarpus* in cultivation, this species is native to South Africa and the leaves are 15cm long

Inverewe but scarcely east of Clyne Gardens, Swansea.

*Melaleuca* and *Banksia* are at their limits in Britain, both in their chances of surviving hard winters and of become tree-like. *Melaleuca linariifolia* is currently 8m at Tresco Abbey Garden, but a dozen other species in cultivation might make equally showy flowering trees in a

warm sunny spot. *Banksia marginata* is the toughest, though not the most arborescent, of its genus and has typically chalk-white underleaves. Aubrey Fennell recorded a tree of 9m x 35cm at Guincho in Co Down in 2003, and it is vigorous in Southend, Essex.

The Tasmanian *Leptospermum grandiflorum*, with its silvery-silky 3cm leaves, could be the handsomest of its free-flowering genus, and is 7m at the Garden House in Devon. A cultivar of another Tasmanian, *L. nitidum* 'Copper Sheen', thriving at Tregothnan, has shining pale red foliage of extraordinary beauty.

Grass trees (*Xanthorrhoea*) ought to appeal to contemporary tastes in garden design, looking as they do like a cross between a clump of grass and a tree fern. An established *X. preissii* at Trebah, Cornwall, was 1.1m to the bud by 2004. Another oddity, which has made a miniature self-seeding tree at Knoll Gardens near Wimborne, is *Polyscias sambucifolia*, highly attractive in its finely pinnate leaves and mauve berries. (Under its old name *Teigbemopanax*, this



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*Eucryphia moorei* at Trewithen, Cornwall, flowering in late September. The leaves of this SE Australian species are more markedly pinnate than others in the genus



Chris Young

Given the popularity of avocado fruit and the appeal of germinating the large seeds, it is perhaps not surprising to find a large specimen of *Persea americana* in central London

survived for 13 years at Nymans, Sussex, until the 1920s.)

*Grevillea robusta* is a giant east Australian flowering tree, popular in warm climates. A shapely 12m spire in Swansea's Brynmill Park significantly began its life in a since-demolished greenhouse. In Lower Road, Rotherhithe, London, a recent street planting has been

less successful; the two survivors in 2005 were growing fast but misshapen from early damage. Another long shot might be *Brachychiton acerifolius*, the flame tree, recommended by Will Arnold-Forster (*Sbrubs for the Milder Counties*, 1948) for its performance at Ilnacullin on Garinish Island, Co Kerry.



Mike Grant

*Polyscias sambucifolia* (left), an Australian species, will produce its purple fruit even as a small tree.

*Lyonothamnus floribundus* subsp. *asplenifolius* (right) flourishes at Ventnor Botanic Garden, Isle of Wight



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### South Africa

The unique Cape Flora, pinned to the southernmost tip of Africa, seems at especial risk from global warming. Whether British gardens will ever become homes from homes for these plants is moot: few tolerate more than the lightest frosts, and many expect summers with no rainfall. Only a small proportion of South African plants are trees, and these, as yet, have only ever thrived at Tresco, although central London might now be just as suitable.

At Tresco, *Calodendrum capense*, the flowering Cape chestnut, was 14m x 97cm when killed by the 1987 frosts. *Leucadendron argenteum*, with its brilliant silver-woolly foliage, excels here, though mainland Cornwall seems too damp. *Virgilia oroboides*, with finely pinnate, sea-grey foliage and pink pea-flowers, is a splendid 7m x 35cm.

Some South African *Podocarpus* must have the biggest leaves of any conifer, surpassing the fairly hardy (if unfairly neglected) Chilean *P. salignus*. These enjoy some humidity: *P. henkelii* is good at Tregothnan and Trelissick, both in Cornwall, while a young grove of *P. matudae* var. *reichii* at Tregrehan, Cornwall, is especially impressive.

### America

*Persea americana* would hardly be seen out-of-doors in Britain were it not so easy for optimistic gardeners to plant avocado stones. In central London, optimism is sometimes rewarded and a slender straight 6m tree in a frost-free sunny basement yard in St Leonard's Terrace, Chelsea, brings some serious tropical glamour to this corner of London, whether or not the fruits actually ripen. (The *Melia*, above, is on the pavement next door.) Two rather different trees, a multi-stemmed 6m at Tresco and a younger 4.5m at Lamorran House, Cornwall, are presumably 'wild' ➤



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*Leucadendron argenteum* has grown to 6m at Tresco Abbey Garden on the Isles of Scilly. Although it struggles on mainland Britain in the west it might be more successful in frost-free central London



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*Livistona australis*, the common Australian fan palm, has reached 9m at Tresco Abbey Garden

rather than fruiting forms.

*Lyonothamnus floribundus*, from a few islands off southern California, is - in its cut-leaved subsp. *aspleniifolius* - an extraordinary little ornamental best suited to hot, dry areas, and 10m at Ventnor Botanic Garden, Isle of Wight. At least three beautifully symmetrical tall-standard street trees were planted in Chelsea a few years ago, but have disappointed: two have died; the survivor (in Wilbraham Place) has grown little, and begun to lean.

### Palms

No group of plants can have been neglected in British gardens for so long, and for reasons so inadequate, as the palms. *Trachycarpus fortunei*,

which must be the plainest of the half-hardy species, was usually and until very recently the only one to be considered. *Washingtonia filifera* and *W. robusta*, from Mexico into California, are sturdier, spruced-up alternatives now growing quickly in several warmer gardens. The several Mexican *Brabea* species carry showy glaucous fans, though they seem reluctant to add height here. Mature imports of the South American *Tritbrinax campestris* have spectacularly spiny twisting stems; *Livistona australis*, an imposing if less eye-catching Australian fan palm, is 9m to the bud at Tresco.

*Phoenix canariensis* is the best-proven palm with feather-like foliage. (Young ones seems most

abundant of all in Hastings.) The 20 old trees currently known are confined to the Channel Islands, Torquay, Tresco and Co Cork, implying stricter limits of hardiness than are obvious today; one more in St Peter Port, Guernsey, succumbed in the *annus horribilis* of 1987 to frost- and storm-damage. Even palms from humid zones such as the Canaries or Andes tend to prefer warmth and sun, and the Guernsey and Tresco trees have thicker trunks than the Irish or Devon ones; too much wet can also promote butt-rot.

*Jubaea chilensis*, from the Andes, has a less showy head of foliage, more like a shuttlecock than a starburst, and is rather tender at first, but given luck and a few years'



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This specimen of *Butia yatay* at Lamorran House, Cornwall, was grown at the garden from seed. It is 20 years old but has not added much height yet. It might be hardier than the better-known *Butia capitata* which tends to suffer from butt-rot in the UK once it has developed a significant trunk

patience it rapidly builds a stupendous elephant-grey trunk; one even survived outside at Kew through the worst winters of the early 19th century. At Noirmont Manor on Jersey it is one of the most spectacular trees I know, 16m (to the leaf-tips) x 109cm. The other old examples, on Tresco and in the garden of 'palm trees', Torquay, Devon, are spoiled a little by curiously bulbous, parsnip-like boles, presumably because growing conditions were not consistently warm enough.

*Butia capitata*, from Brazil to Argentina, carries exquisitely arched soft grey leaves. Old trees (on Tresco, and with three known in Cornwall) form tapering, ungainly trunks and

seem prone to butt-rot, so the long time that saplings take to add height here is not a problem and the expense of importing 2m standards from Italian nurseries hardly seems worthwhile. *Butia yatay* is slightly less glaucous and possibly tougher, though it too has scarcely added height after 20 years at Lamorran House, Cornwall.

*Syagrus romanzoffiana*, popular in warm countries for its smooth grey trunk and cascading foliage, does little to recommend itself in Britain. The hybrid with *Butia capitata*, x *Butyagrus nabonnandii*, goes some way to combining the best of both parents; a thriving sapling in a group of *Butia* planted by Southend Borough Tree Officer, Tim Pyner, in

the Cliffs at Southend, Essex, - a fine park for palms - may be a chance cross.

### Conclusion to part one

It would be foolish to suggest that gardeners planting these species at home will be rewarded in ten years with beautiful, thriving plants: one extreme winter could kill them. But, just by enhancing the biodiversity of our ornamental treescape, they will be deepening its tolerance of climate change. Gardeners in the rainy west have even more trees to choose from, and the second half of this article will discuss these. ■

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